American Association for the Study of Liver Diseases (AASLD) recommendations for the management of adult patients with ascites due to cirrhosis

Evaluation and diagnosis
Abdominal paracentesis should be performed and ascitic fluid should be obtained from inpatients and outpatients with clinically apparent new-onset ascites.
Because bleeding is sufficiently uncommon, the routine prophylactic use of fresh frozen plasma or platelets before paracentesis is not recommended.
Differential diagnosis
The initial laboratory investigation of ascitic fluid should include an ascitic fluid cell count and differential, ascitic fluid total protein, and serum-ascites albumin gradient (SAAG).
If ascitic fluid infection is suspected, ascitic fluid should be cultured at the bedside in blood culture bottles prior to initiation of antibiotics.
Other studies of ascitic fluid can be ordered based on pretest probability of disease.
Testing serum for CA125 is not helpful in the differential diagnosis of ascites. Its use is not recommended in patients with ascites of any type.
Treatment of ascites
Patients with ascites who are thought to have an alcohol component to their liver injury should abstain from alcohol consumption.
Baclofen can be given to reduce alcohol craving and alcohol consumption in patients with ascites in the setting of alcoholic liver disease.
Firstline treatment of patients with cirrhosis and ascites consists of sodium restriction (88 mmol/day [2000 mg/day]) and diuretics (oral spironolactone with or without oral furosemide).
Fluid restriction is not necessary unless serum sodium is less than 125 mmol/L.
An initial therapeutic abdominal paracentesis should be performed in patients with tense ascites. Sodium restriction and oral diuretics should then be initiated.
Diuretic-sensitive patients should preferably be treated with sodium restriction and oral diuretics rather than with serial paracenteses.
Use of angiotensin converting enzyme inhibitors and angiotensin receptor blockers may be harmful and must be carefully considered in each patient. Patients on one of these agents require blood pressure and renal function monitoring.
The use of nonsteroidal anti-inflammatory drugs should be avoided in patients with cirrhosis and ascites, except in special circumstances.
Liver transplantation should be considered in patients with cirrhosis and ascites.
Refractory ascites
Patients with refractory ascites may have increased mortality with beta blockers. The risks versus benefits of beta blockers must be carefully weighed in these patients.
Angiotensin converting enzyme inhibitors and angiotensin receptor blockers should be avoided in patients with refractory ascites.
Oral midodrine has been shown to improve clinical outcomes and survival in patients with refractory ascites, and its use should be considered.
Serial therapeutic paracenteses are a treatment option for patients with refractory ascites.
Postparacentesis albumin infusion may not be necessary for a single paracentesis of less than 4 to 5 L.
For large-volume paracenteses, an albumin infusion of 6 to 8 g/L of fluid removed can be considered.
Referral for liver transplantation should be expedited in patients with refractory ascites.
Transjugular intrahepatic portasystemic stent-shunt (TIPS) may be considered in appropriately selected patients who meet criteria similar to those of published randomized trials.
Peritoneovenous shunt, performed by a surgeon experienced with this technique, should be considered for patients with refractory ascites who are not candidates for paracenteses, transplant, or TIPS.
Hepatorenal syndrome
Urinary biomarkers such as neutrophil gelatinase associated lipocalin may assist in the differential diagnosis of azotemia in patients with cirrhosis.
Albumin infusion plus administration of vasoactive drugs such as octreotide and midodrine should be considered in the treatment of type I hepatorenal syndrome.
Albumin infusion plus administration of norepinephrine should be considered in the treatment of type I hepatorenal syndrome when the patient is in the intensive care unit.
Patients with cirrhosis, ascites, and type I or II hepatorenal syndrome should have an expedited referral for liver transplantation.
Spontaneous bacterial peritonitis (SBP)
Patients with ascites admitted to the hospital should undergo abdominal paracentesis. Paracentesis should be repeated in patients (whether in the hospital or not) who develop signs or symptoms or laboratory abnormalities suggestive of infection (eg, abdominal pain or tenderness, fever, encephalopathy, renal failure, acidosis, or peripheral leukocytosis).
Patients with ascitic fluid PMN counts ≥250 cells/mm^3 (0.25 X 10^9/L) should receive empiric antibiotic therapy, eg, an intravenous third-generation cephalosporin, preferably cefotaxime 2 g every 8 hours.
Oral ofloxacin (400 mg twice per day) can be considered a substitute for intravenous cefotaxime in inpatients without prior exposure to quinolones, vomiting, shock, grade II (or higher) hepatic encephalopathy, or serum creatinine >3 mg/dL.
Patients with ascitic fluid polymorphonuclear leukocyte (PMN) counts <250 cells/mm^3 (0.25 X 10^9/L) and signs or symptoms of infection (temperature >100°F or abdominal pain or tenderness) should also receive empiric antibiotic therapy, eg, intravenous cefotaxime 2 g every 8 hours, while awaiting results of cultures.
When the ascitic fluid of a patient with cirrhosis is found to have a PMN count ≥250 cells/mm^3 (0.25 X 10^9/L) and there is high suspicion of secondary peritonitis, it should also be tested for total protein, LDH, glucose, Gram stain, carcinoembryonic antigen, and alkaline phosphatase to assist with the distinction of SBP from secondary peritonitis. Computed tomographic scanning should also be performed.
Patients with ascitic fluid PMN counts ≥250 cells/mm^3 (0.25 X 10^9/L) in a nosocomial setting and/or recent beta-lactam antibiotic exposure and/or culture of an atypical organism(s) or an atypical clinical response to treatment should undergo a follow-up paracentesis after 48-hours of treatment to assess the response in PMN count and culture.
Patients with ascitic fluid PMN counts ≥250 cells/mm^3 (0.25 X 10^9/L) and clinical suspicion of SBP, who also have a serum creatinine >1 mg/dL, blood urea nitrogen >30 mg/dL, or total bilirubin >4 mg/dL should receive 1.5 g albumin/kg body weight within 6 hours of detection and 1.0 g/kg on day three.
Prevention of spontaneous bacterial peritonitis
Intravenous ceftriaxone for seven days or twice-daily norfloxacin for seven days should be given to prevent bacterial infections in patients with cirrhosis and gastrointestinal hemorrhage.

Patients who have survived an episode of SBP should receive long-term prophylaxis with daily norfloxacin (or trimethoprim/sulfamethoxazole) because this is the most data-supported indication for long-term outpatient prophylaxis.
In patients with cirrhosis and ascites but no gastrointestinal bleeding, long-term use of norfloxacin (or trimethoprim/sulfamethasoxazole) can be justified if the ascitic fluid protein <1.5 g/dL and at least one of the following is present: serum creatinine ≥1.2 mg/dL, blood urea nitrogen ≥25 mg/dL, serum sodium ≤130 mEq/L, or Child-Pugh ≥9 points with bilirubin ≥3 mg/dL.
Intermittent dosing of antibiotics to prevent bacterial infections may be inferior to daily dosing (due to the development of bacterial resistance) and thus daily dosing should preferentially be used.
Hepatic hydrothorax
Chest tube insertion is contraindicated in patients with hepatic hydrothorax.
First-line therapy of hepatic hydrothorax consists of dietary sodium restriction and diuretics.
TIPS can be considered as second-line treatment for hepatic hydrothorax once it becomes refractory to sodium restriction and diuretics.
Additional considerations
The risks versus benefits of hernia repair must be weighed carefully in patients with cirrhosis and ascites. Elective repair can be performed during or after liver transplantation.
Elective repair of a hernia in a patient with cirrhosis is best performed after ascites has been controlled by medical treatment, the patient's overall condition has been optimized, and a multidisciplinary approach with consideration of perioperative TIPS is utilized.
Emergent repair of a strangulated or perforated umbilical hernia is best performed by a surgeon who is experienced in the care of patients with cirrhosis.
Cellulitis can explain pain and fever in patients with cirrhosis and ascites and should be treated with diuretics and antibiotics.
Percutaneous endoscopic gastrostomy tube placement should be avoided in patients with cirrhosis and ascites.

Data from: Runyon BA. Management of adult patients with ascites due to cirrhosis: Update 2012.
http://www.aasld.org/sites/default/files/guideline_documents/adultascitesenhanced.pdf (Accessed on April 26, 2013).

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